

# Aviation News

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Russians study London air parity for their own representatives open conversations with United States officials.....Page 36



New B-25 Profile On Tokyo Raid Anniversary: Two years ago, Apr. 18, B-25's bombed Tokyo. They carried two .30-caliber guns in the nose, two .50-caliber guns in the upper turret. The nose of the plane above carries eight .50-caliber guns and a 75-mm. cannon. Top turret, tail mount and two waist .50's complete the armament of 14 machine guns.



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# Johnston Appraises Air Progress For First Five Post-War Years

Washington representative of Curtiss-Wright Corp. and *Wings After War* author sees rosy hopes of aviation enthusiasts realized in time, but probably not so soon as forecast.

By BLAINE STUBBLEFIELD

Miracles of flight currently promised in the popular press to commence and the citizen pilot will be made good, but not so soon as most people believe. Objectives can be realized sooner if the Government will take the lead in implementation of a definite policy and plan, says. This conclusion is reached in *Wings After War*, a monograph by S. Paul Johnston, aeronautical engineer, executive and laterman. The book will appear April 28.

A dozen governmental and private post-war planning boards and commissions, each with a different point of view, each trying to beat its particular issue the hottest in the fire of public opinion, are merely creating confusion, says the author, who is Washington representative for Curtiss-Wright Corp. He suggests that the President, without influence of partisan politics, appoint a free-man committee, representing aircraft manufacturers, air transport, the Army, the Navy, and Labor. This committee would formulate the policies of the immediate post-war period. Out of its work might emerge a permanent body for the coordination and control of all aviation. Possibly the creation of a Cabinet post for Air would be the final answer.

Urges U. S. Policy—The govern-



S. Paul Johnston

ment must make up its mind what it wants and expects of the aviation industry, and must announce it in a loud clear voice. It must decide how far it plans to go to encourage private flight by relaxing restrictions and by expanding the airports program. It must settle once and for all the place of civilian air transport in the national transportation pattern. It must come to some agreement quickly with other governments concerning the rules and regula-

tions under which world air routes will be operated. Above all, it must tell industry its future needs for military aircraft, its plans for the disposal of the wartime surplus, and what it proposes to do with the plants it has built for war use.

The book, published by DaSil, Sloan and Pearson, details the technical problems that must be solved before current prohibitions can be made good. The author believes that aircraft design will follow its present basic pattern for several years after the war. Airplane efficiency has reached the point of diminishing returns. Practical gains are made laboriously by research men with wind tunnels and slide rules.

Mr. Johnston, former editor of *American Magazine* and later coordinator of research for the National Advisory Committee for Aeronautics, believes that whether post-war personal planes are plastic, wood, metal or cloth, 1924-26 models will persist for several years. Their utility will remain limited, and the annual sale rate will not approach 20,000 per year for at least five years, and then only if general prosperity exists. In-line or flat-opposed air-cooled engines will be used, controls will be simplified.

► **Plane Types**—Ronde type, to improve utility, can be flown, but weight and cost will be hard problems. Desirability of the helicopter is beyond question, but perfection of this machine will require great engineering effort over a period of years. Successful application of jet power to commercial planes is not expected in less than five years. Atom-stashing power is a possibility in the farther future. All-wing design begins to

be practical at gross weight of about 150,000 pounds, a long jump above the current cargo glider plane is not promising.

Air transport, in Mr. Johnston's opinion, holds the brightest spot in the first post-war decade of aviation. Within five to seven years, planes may appear which will satisfy a 3-cent per seat mile fare, but for the first post-war years, best guess is for a 4-cent minimum. At present 10 cents per ton-mile expense (sales, few commodities can be carried, 600-mile rate reductions will add to the list.

## Official Tells Story Of Merlin Adaptions

Manufacturing drawings of Rolls-Royce engine alone kept 75 men working four months, Packard officials told SAE meeting in New York.

Seventy-five men working four months were required to make the manufacturing drawings for American production of the Rolls-Royce Merlin engine, Cal. Jesse G. Vincent, vice-president of engineering of Packard Motor Co., says in a paper prepared for presentation to the Society of Automotive Engineers at a national aeronautics meeting in New York.

Describing the difficulties of procuring for production of the British engine, selected because it could be put into production before any comparable American engine, Vincent said that almost two tons of British blueprints had to be completely redrawn because of the differences of nomenclature and methods. Specifications for the finish of all parts had to be established and included on the drawings.

► **Carburetor Changed**—The only change made in the engine was the substitution of an American-designed and built carburetor for the British carburetor formerly used, Vincent explained, in the effort to get the engine into production. More than 60,000 gauges, tools and fixtures were designed and constructed as the drawings came from the drawing room.

G. Wayne Thomas, executive engineer, Continental Motors Corp., also presented a paper at the meeting, describing the application of air-cooled surplus engines to tanks. He explained that light tanks are using 250 hp. radial engines and medium tanks 400 hp. engines the first a Continental and



DODGE OPERATES LARGEST MAGNESIUM FOUNDRY; Castings being cleaned and made ready for machining in one of the 28 buildings of Chrysler Corp.'s huge Dodge Chrysler plant, where 25-cylinder Wright 2200 hp. engines are manufactured. Current output of magnesium at the plant is 50,000 pounds daily.

the latter a Wright Whirlwind. Advantages derived from use of air-cooled surplus engines are weight saving, increased vulnerability to damage, a serious factor in liquid-cooled engines, cooling is accomplished with less expenditure of power, and increasing condensation.

## Lothrop Reports On Post-War Study

Tells Harvard alumni his 1943 survey shows market for 1,700 transports in first two post-war years.

Evidence of the widespread, sustained attention being given various reports of aviation authorities on future transport operations was born last week when Harvard Business School alumni at New York called on E. Earl Lothrop to present in person the details of a study he made some months ago on the probable market for planes in the immediate post-war years. Lothrop, who is manager of the Research and Statistical Department of the Aeronautical Chamber of Commerce, made his study last year. It was published in the December issue of *Aerospace*. In it he predicted that, in the first two years after the war, 1,700 new transport planes, with a value of \$512,500,000, will find a market. This he breaks down to 1,500 for domestic operation, 100 for inter-

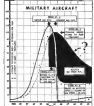
national operation by United States airlines, and another 100 for export. About 350 planes were being operated by the nation's commercial air carriers when the war started.

► **New Planes Preferred**—Lothrop believes that the major airlines probably won't accept wartime transport planes for conversion, but will prefer new, more efficient models he thinks can be built at once in line with those of conventional planes. "Any wholesale utilization of military craft for commercial purposes for a two- or three-year period," he said to the Harvard group, "would be a major tragedy for our commercial airline system and the aircraft manufacturing industry."

He sees the "most expensible market" for the plane manufacturer in the private flying field, but looks for only 8,000 new private planes including a "dubious total" of 1,000 helicopters. The military's share of the two-year market he estimates at 20,000 maximum.

► **Post-War Forecast**—For the first five post-war years, he forecasts a market for 2,020 commercial passenger craft, 2,870 cargo planes and 30,000 military planes, with personal plane requirements not estimated.

Chambers L. Welch, Page of the Civil Aeronautics Board also spoke briefly at the meeting.



# Industrial Demobilization Plans Get Under Way in Senate and WPB

George committee urges immediate legislation on contract termination; Donald M. Nelson establishes advisory committee to help formulate reconversion policies.

Reconversion moved slowly ahead on two fronts last week. In both cases the movement was weak and uncertain, but it contrasted sharply with the inactivity and lack of agreement which has characterized administrative and Congressional action up to this time.

The most significant step forward was that taken by the Senate Committee on Post-war Economic Policy and Planning. This special committee, headed by Senator George, recommended to the Senate Military Affairs Committee, that the various phases of industrial demobilization be broken up and considered separately. Specifically, the committee asked that contract termination legislation be enacted first.

**Special Report Made.** "If (the committee) has concluded," said a special report, "in view of the speed with which contracts are being terminated, and the legal obstacles in the way of their settlement, that it is imperatively necessary that legislation dealing with the subject be passed at the earliest possible moment and that such legislation not await the solution of other problems of demobilization."

This was generally felt to be an important development, since the Senate has heretofore been totally unable to agree on whether or not contract termination should move alone or as a part of a broader demobilization legislation.

**Murray Bill.**—If this recommendation is followed, and there is reason to believe that it will be, S. 1171—the Murray contract termination bill—will be reported soon, and debate will begin on the floor of the Senate. This would be real and substantial progress.

It was clear, however, that S. 1171 was in for some heavy shoving, and this would suggestably delay and make more tortuous its passage through the Senate. Senator Murray, author of the original bill, announced that he expected two amendments. One of these would provide for unemployment compensation on cancellation of contracts, the other would

## Rotary Wing Lag

Although four companies have been given the green light to produce rotary wing aircraft, actual production is slow, and about 50 percent below schedules. Washington officials acknowledge fewer than 50 such craft were produced in 1945, and monthly output now is running less than 20.

As previously announced, the companies in the rotary wing program are G. A. & W. Edgar, Penna.; Phil LeVoy of Advo-Tech, Penna.; Sikorsky Division of United Aircraft Corp. and Kellie Aircraft, Philadelphia.

gave the Comptroller General broad power for investigating and reporting to Congress on waste and extravagance in post-station audit. While neither of these amendments has yet been drawn up, Senator Murray predicted they would be prepared soon and that the entire measure would be passed during the present session of Congress.

**New WPB Committee.**—The other significant action of the week developed in the War Production Board, where Chairman Donald M. Nelson established an Advisory Committee on Civilian Policy. Obviously designed to be a top-flight committee to help formulate reconversion policies, the group was scheduled to meet and start functioning immediately.

While the exact task of the new committee was not fully known, it was said by persons close to Mr. Nelson to consist of examination of cutbacks, development of policies to return idle facilities to civilian production, and determination of procedures to follow in solving unemployment and manpower problems. All in all, it would be WPB's reconversion committee and, on matters of civilian production and other reconversion problems, probably would occupy a similar level of authority with the Production Executive Committee.

**Membership.**—Asked to serve on the committee were Eric Johnston, president of the U. S. Chamber of Commerce; Roy L. Glick, president of the National Association of Manufacturers; William Gossett, president of AFL; Philip Murray, president of CIO; Eugene Meyer, publisher of the Washington Post, and several others.

Whether or not this committee would replace the Production Planning and Adjustment Committee, which was understood to have been in process of forming under direction of Vice Chairman Charles E. Wilson, remained to be seen. Their functions seemed so much alike that it is very doubtful that both committees actually will be established.

It also was stated that Dr. Luther Gulick, who has been associated with WPB in the past, had agreed to return to the agency and help integrate the new committee into WPB and plan whatever reorganization will be necessary to permit the committee to function properly. Industry of Mr. Nelson in name a successor to Arthur D. Whitehead, who resigned as Director of the Office of Civilian Requirements about two months ago, also was traced to the impending reorganization of WPB around the new committee.

## UAL Approved for Denver-L. A. Route

Recommendation that United Air Lines be given the highly prized route between Denver and Los Angeles mounted up last week. Denver, Colo., and Las Vegas, Nev., to spin a big gap in the nation's commercial air network, has been made to the Civil Aeronautics Board by Executive Albert F. Smith.

Four lines had applied. Two of them, United and Transcontinental & Western Air, are among the largest of the domestic companies. Two smaller applicants are Continental Air Lines and Western Air Lines. The examiner recommended a demand of the other three applicants.

**Transcontinental Carrier.**—He decided, on the basis of hearings held in January, that because of the nature of passenger passenger traffic over the route, it could best be served by a transcontinental carrier. Most of that traffic, he said, will come from or go to one of two cities.

Smith described the route as "inherently a segment of a Great Circle transcontinental route," and the type of equipment necessary could best be utilized by a transcontinental carrier.

TWA had submitted it could provide Denver-Los Angeles service and simultaneously give Den-

## BRIEFING

Western Committee on post-war military policy is completing its organization and is expected to begin hearings soon.

Admission of a top secret meeting, too, 96 other guests has added to the first group of the Douglas A-26 to give it a total of about 50. Six are included in the room, six from the plane's vicinity.

Formosa of the National Aviation Supply Co. is announced by Albert McGee, president. Officers and warehouse are at 701 E. Carson St., Pittsburgh 3. The company, McGee said, will have personal representation at its states, and will make a national office.

Reggie has been made officially that the President has 300 land on the number of places the domestic airlines may use in their commercial operations. There is said to be little doubt that the Presidential order will be needed when the Army is ready to turn back more planes to the airlines. The new plan will be the first since the last order from the Army, three years ago, when it was said that Northwest and TWA, and one each to Delta and Pennsylvania-Central. When all have been placed in operation, the total in commercial use will be at the wartime level.

## Douglas Forms Own Termination Body

A corporate termination claim committee to develop and direct the mechanics of major contract termination has been created by Douglas Aircraft Co. So new the committee will be in operation for policies that will apply to the handling of termination claims, it nevertheless tends to a probable industry-wide trend to create corporate units that will be trusted and ready to act when negotiations assume major and complex proportions.

**Additional Service.**—The need for additional service between Los Angeles and other cities, Smith said, "is greater than the need for additional service between Denver and the east." He pointed out, too, that both United's and TWA's proposals would direct traffic from Western AM 13, but TWA's plan would also take considerable from Continental, AM 68, while United's operation would have little effect there. TWA's proposal would require establishment of 1,200 route miles, while United's was the mileage would be 187.

**Adverse Effect on Western.**—Acknowledging that the route would have "a serious adverse effect on Western," Smith declared the recommendation showed benefits from transcontinental operation would outweigh that disadvantage. The public interest, he said, requires selection of a transcontinental operation "despite the fact that both Western and Continental need additional profitable mileage."

Specifically, he recommended that United's certificate for AM 1 be amended to include Los Angeles as a terminal point and Grand Junction and Las Vegas as intermediate points between Denver and Los Angeles.

and controller, who serves as committee chairman.

First step of the termination claim committee will be appointment of a sub-committee to act on termination claims of less than \$50,000, thus clearing the deck for the major committee's development of mechanics for the handling of major terminations, when and if they come.

**Backing of Three Billion.**—An indication of the necessity for creation of the committee is the fact that Douglas Aircraft now carries a three-billion dollar backlog that may be subject to critical attacks by contract terminations.



## NAVY FIRE FIGHTING UNIT

Using the improved Sears high pressure fog unit produced by the Food Machinery Corp., Navy firefighters are able to relieve crewmen from burning planes faster and with greater safety. A fog spray protects the fireman while he goes from the machine nearer the fire area. Mechanized foam for fire that fog alone cannot extinguish also can be used with the Sears unit.

## 100-Octane Plants Called Investment

Latest close competitively small government participation in developing equipment necessary of work in U. S. and was agencies.

By MARY PAULINE PERRY

Expansion in postwar commercial and private flying should make the country's output of \$700,000,000 for 100-octane aviation gasoline facilities a sound economic investment, Petroleum Administrator for War Harold L. Ickes predicts.

He points out that no other major industry has so much a proportion of government participation. Eighty-two percent of the ultimate capacity of 100-octane plants in the U. S. will be privately owned, with private companies obtaining approximately \$500,000,000 of their own money and about \$210,000,000 of government investment.

**Financing.**—Expansion of facilities for production of 67 and 81 octane gasoline needed for training purposes and conversion of existing equipment for 100-octane production was accomplished entirely with industrial capital. The new plants are being built mainly with funds from Defense Plant Corp.

War will mark the tenth anniversary of the first shipment of 100-octane gasoline to the Army Air Forces at Wright Field. The largest amount ever delivered, 1,000 gallons, was delivered to Wright Field for test purposes.

**War Production Board** has received a series of recommendations for increasing output of anti-friction bearings, used in aircraft and engine programs, from the Anti-Friction Bearing Labor Advisory Committee. The committee pointed out that bearing production must be increased and made wage, turnover and employment suggestions.

**Aluminum Shipments.**—A total of 215,689,666 pounds of aluminum fabricated products was shipped during January, 34 percent more than in January, 1943. Sheet aluminum showed the greatest rate of any product with 63,000,000 pounds being shipped as against 66,200,000 pounds during Decem-

ber, 1943. The War Production Board said. There was a 33 percent increase in January this year of output which totaled more than 44,000,000 pounds.

**War Department** announced that an Army Service Forces' requisition for 100-octane aviation gasoline has been designated in each of the War Production Board's 13 regions to work with other government agencies to raise production and help solve manpower and draft problems. Each regional representative will organize an Advisory Committee composed of representatives of each of the Army's technical services, the Army Air Forces and the service commands which have an interest in development or installation in that region. The 13 offices will arrange for representation on all Area Production Urgency and Manpower Priorities Committees.

The War Department has awarded a contract for construction of additional landing field facilities and roads at Indian Springs Army Airfield, Nevada, for an estimated \$234,116.

**Army Air Forces** have let contracts for additional construction of airports and airfields totaling approximately \$3,445,000.

## Lockheed Asks Fair Termination Policy

Lockheed Aircraft Corp. last week joined other firms in the aviation industry demanding government fair dealing in renegotiation and contract termination.

Robert E. Gross, president of Lockheed, in announcing a value of \$687,484,167 on production and services performed in 1943, and a 1943 stock earning of \$7.46 a share after subtracting depreciation not yet discussed with the government, said "The aircraft industry must take its chances on getting business after the war, but nevertheless it must not be penalized and broken by termination problems."

**1943 Accounting.**—In Lockheed's 1943 accounting, provision was made for a \$15,000,000 reduction of sales income through renegotiation, and \$14,377,357 as a provision for possible inability to obtain payment on all items charged to cost-plus-fixed fee contracts.

Lockheed earmarked \$9,000,000 of 1943 earnings for post-war adjustments and ended the year with \$19,389,888 working capital.

## 550 of 1,000 WTS Surplus Planes Sold

Fifty 5,000 may be put on market with termination of pre-military flight courses.

Up to last weekend, about 550 of the 1,000 light airplanes declared surplus by CAA's War Training Service had been sold to bidders.

Now that the last of the WTS pre-military flight courses is ordered discontinued as of June 30, probably all 2,000 of the training planes (including the above 1,000) on loan from Defense Plant Corp. will be declared surplus and put on the auction block.

**Demand Heavy.**—So far there has been a lively demand for the planes on sale, at fairly substantial prices, and WTS officials say they believe that, barring unforeseen developments, all 5,000, if put on the market, could be sold this year.

Progressive closing of Air Force contract schools of the Aeronautical Training Society brings up the question whether their planes also will be offered for sale. Institutions that are contract school planes, which belong to the Army, will be set aside as they become surplus.

**185 to 225 hp.**—Most of the primary (PT) planes of the contract schools range between 165 and 225 hp. The basic trainers (BT) rate 115 to 125 hp. Planes having more than 105 hp. are not marketable in appreciable numbers to private fleets, because of their large gale force consumption and expensive maintenance.

Opinion is expressed that the Army will not try to sell them when all the contract schools are closed, but will place them as standby. Time and swift obsolescence will soon fetch them to the boneyard.

## Martin Election

All officers of the Glenn L. Martin Company were re-elected at the annual meeting of stockholders last week.

They are Glenn L. Martin, president; Joseph B. Martin, Harry F. Volkmann, William K. Ebbel, Harry T. Rowland, vice-presidents; Myron G. Shook, treasurer and assistant secretary; Morgan E. Schermerhorn, Jr., comptroller; and Thomas H. Jones, secretary.

## Pilot Training Cuts Traced to Quotas

Tapering off program attributed to two high schedules and unexpectedly low attrition rate.

The high quotas and a lower attrition rate than originally anticipated are contributing factors to the tapering off of pilot and air crew training by both the Army Air Forces and the Navy. In addition, both services are lengthening the training period for pilots to permit greater emphasis on quality than on the number of men trained.

The Navy revised 1944, 1945 and 1946 requirements and concentrated all pre-flight training in four schools consistent with their withdrawal from the CAA-War Training Service, which becomes effective during the summer.

**Naval Requirements.**—Prospective naval aviators are now required to spend three college terms in the V-12 program before entering aviation training.

The AAF announced termination of training of pilots and air crew in 61 institutions by June 30, and termination of contracts of eleven civilian flying schools, members of the Aeronautical Training Society, by Aug. 4. Pro-

visionally 13 schools were closed or closing. This follows closely the announcement that 35,000 prospective aviators have been released to the Army Ground and Service Forces.

Meanwhile, the Senate passed Senator Pat McCarran's bill to extend the Civilian Training Act of 1939, and continue the CAA-GP civilian schools. The House sent the bill to the Committee on Interstate and Foreign Commerce for consideration.

**Affects Crew Students.**—The closing of the 61 college courses affects only air crew students and does not alter the status of Army Specialized Training Program, the Army Specialized Training Reserve Program and the AAF Ground Crew Training Program.

Students in the college air crew training program who are still in college on June 30 will be assigned to on-the-job air crew training at air fields in the AAF Training Command while awaiting permanent instruction. All those at the eleven flying schools will finish their current course of instruction before being moved on to the next course at an Army school.

**Civilian Schools.**—It is estimated that, of the 61 civilian contract schools giving all primary flight training for the AAF, only about 30 will continue after August. The

record set by these schools is good and they point out that cadets from these schools are flying ten times as many plane miles a month as all the airlines operating in the U. S. In November, the 16 domestic airlines flew 9,419,663 miles while AAF cadets flew 94,500,000.

## First Liberator Used for Tests

Posner plane now operated as laboratory for Consolidated Value at San Diego.

The first Liberator bomber built is still flying and contributing its part to the building of better bombers.

This original version of the Liberator is used as a flying laboratory at San Diego, and has down in numberless terms, with superimposed wing, struts, variations of landing gear, for step-by-step characteristics tests and for other experiments, many of which still are on the secret list.

**Boiler Tests.**—Built in 1941, the ship has been used as an experimental plant for improvements on the battle models of the B-34. Proved on this ship, known to Consolidated Value plants as "Ground-sweep," the changes are put into the production models.



**First "Liberator" Used as Flying Laboratory.** Photo at left shows the first Liberator, now being used by Consolidated Value in experimental work, in this case testing a new type wing. Superimposed on the wing is an experimental device to determine the profile drag and other performance characteristics.

A wing approximating a bomber four-engine. At right, single-unit hydraulic bracket, designed by a Consolidated Value engineer, is mounted as the first Liberator's wheels for service testing. Wheel-driven hydraulic pump, accelerometer and selector valves all are mounted on the wheel.



## End of Delay Asked On Termination Bill

Committee recommends that hearings be suspended on George Murray measure and that bill be reported out.

Terracing it "imperatively necessary that legislation dealing with" contract termination "be passed at the earliest possible moment," the George post-war economic policy and planning committee has requested quick passage of the George-Murray bill and recommended the hearings be suspended and the bill reported out.

The changes, those close to the George Committee and the Senate group that drew up the original declassification plan, represent "complete agreement" between the two groups. There has been some indication of Congressional reluctance to accept the Senate blueprint, but this latest report may be the final step in working out, quickly, the necessary overall plan for return of the country to some semblance of normalcy.

**► Machinery**—The machinery of the report is rather unusual, in that the George Committee made its report to the subcommittee on War Contracts of the Senate Military Affairs Committee. This committee is headed by Senator James E. Murray (D. Mont.), who is co-author with George of the declassification bill. The bill is heated largely to contract termination and largely embodies the recommendations of the Senate report.

Of primary importance in the draft of the bill to be reported in the Senate is the emphasis on binding agreements being made quickly. The authority of the General Accounting Office, the bill now draws states, "shall be confined to determining after final settlement" whether excessive payments or fraud have been involved in payments to contractors. As an additional provision, the bill adds that "the GAO shall not be charged with the duty or responsibility of detecting frauds in connection with such settlements except as the presence of fraud may be indicated by the records."

**► Warren Pretexts**—This amendment was sought by the War Dept. and drafted by Controller General Lindsay Warren. Generally speaking, full GAO review of settlements would mean delays that in the case of the aircraft industry might be disastrous.

In the form that undoubtedly will reach the Senate floor, although it may strike some ramps in the House, the bill provides the machinery for interim financing, removal and storage of materials not needed after termination, and appeal channels. The procedures would be in charge of a director of Contract Settlements, with contracting branches of the government being used to the fullest possible extent on termination.

## Republic Delivers 6,500 P-47's to AAF

More than 6,500 Thunderbolt P-47's have been delivered to the Army Air Forces by Republic Aviation Corp., Alfred Marchev, president, told stockholders at the annual meeting last week. The Thunderbolts have been built at the Farmingdale, Long Island, and Evansville, Ind., plants. Marchev also disclosed that P-47's are being delivered in quantity to three allied nations countries.

Directors, with the exception of R. S. Damon, who has returned to his post as vice-president and general manager of American Airlines, were re-elected. Damon declined re-election because of his return to airline service.



### BIGGEST PROPELLER:

This four-bladed Hamilton Standard propeller, nearly 17 feet in diameter, is used to be the largest airplane propeller being produced on a quantity basis. Larger ones have been built, but they are not currently scheduled to fly. One shows here is of the hydrodynamic type and has blades of duralumin.

## Vickers Selection For DC-4 Explained

Canadian-owned Victory plant busy with \$200,000,000 Lancaster contract, Howe reveals.

Agreement between Douglas Aircraft and Canadian Vickers, Ltd., Montreal, to manufacture Douglas DC-4's for Canada's post-war use involves approximately \$15,000,000.

This detail of the arrangement was disclosed in Parliament by Ministers and Supply Minister C. D. Howe, in answer to criticism from Ontario's premier, George Drew, who asked why the airplane was not being built at the government-owned Victory Aircraft, Ltd., plant near Toronto.

**► Holds Contract**—Howe pointed out that Victory Aircraft holds a contract for construction of Lancaster four-engine bombers amounting to about \$55,000,000 and that Vickers was chosen for the DC-4 job because the company did not have a long-term war contract.

There has been considerable discussion in Canadian political circles on the choice of the DC-4, since Howe said it was chosen by aviation experts as the aircraft best suited to Canada's flying needs for the immediate post-war period.

**► Chosen By Two Surveys**—Toronto Financial Post reported that it had learned that both Trans-Canada Air Lines and Canadian Pacific Airlines made independent surveys as to the type of aircraft required by Canada for the post-war period and that each came independently to the conclusion that the DC-4 fitted into the program.

The Financial Post also said the contract apparently permits Canada to sell DC-4 aircraft on a competitive basis with the parent company in Great Britain.

**► Financial Setup**—About a quarter of the shares of Canadian Vickers are held by Louman, Ltd., an investment trust of a Belgian banking concern, Solvay et Cie, now headquartered in London. About two-thirds of the shares are held by individual Canadians, the rest by individuals in the United States, Great Britain, Bermuda and Newfoundland.

The plant now making DC-4's is Canadian government-owned and managed by Canadian Vickers on a fee basis.



## The real payload is the full load

Let's be realistic. Many have prophesied, various included, the future virtues of air transportation. The industry will leave its great possibilities. But the most pressing problem in aviation will be to make sure that all transports, large and small, fly full.

The full transport is the key to expansion because it makes possible reduced rates—and, in turn, more business. First and most basic, the opening up of new cargo possibilities, the establishment of

longer routes, faster schedules and more economical operations, are goals which will provide increased public usefulness and acceptance. All are within reach and can be made realities of the new future.

As an engine manufacturer, our contribution to operating economy. The aircraft designer can rely on Wright engines to operate on less fuel and cost less for maintenance. And because they weigh less than comparable propellers, they provide a profitable payload bonus. Wright Cyclones pay their way.



### Cyclones Save 3 Ways

LESS WEIGHT—MORE PAYLOAD  
BETTER FUEL ECONOMY  
REDUCED MAINTENANCE

# WRIGHT

Aircraft Engines

**"We at Colonial Value a Pound  
Saved on a Plane at \$400.00"**

**SAYS SIGMUND JANAS,  
PRESIDENT, COLONIAL AIRLINES, INC.**



"**AIRPLANE** manufacturers are keeping a constant look-out for practical means of reducing the empty weight of aircraft. One example of this is the unencumbered Boeing Flying Fortress, now being delivered without war paint in accordance with the War Department's recent directive. This change lightens each big bomber by some 60 pounds, adds several miles per-hour speed. All this cannot be measured in terms of money. But on commercial planes, weight saved and increased revenue are synonymous. Here at Colonial Airlines, we estimate that every pound saved is worth \$400.00 throughout the first five years of the life of a plane."

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- Much lighter but tougher than other nuts.
- In wartime specified for all types of military aircraft.
- In peacetime will be standard fastenings on commercial planes.
- Can be used over and over without the accelerated locking loss of other nuts.
- "Outlast the plane."
- Approved by all government aviation agencies.

#### WING-STYLE NUTS — IN CHANNEL

This is one type of the famous Boots All Steel Self-Locking Nut—used in aircraft to correct clearance for speed to assembly.



**BOOTS SELF-LOCKING NUTS**  
*"They Fly With Their Boots On—Lighter"*

Boots Aircraft Nut Corporation, General Office, New Casson, Conn., Dept. 1

## THE AIR WAR

### COMMENTARY

## Airpower Facing Its Greatest Test in Next Six Months

Flood of value more evident in staving off defeat in Pacific than in European theater, where Allied air dominance is not so marked as against Japs.

It is difficult to stay in the middle of the road when considering such a controversial subject as the place of airpower in modern warfare. Disregarding theories for the moment, what are the facts? In the Asia-Pacific theater there is no question regarding the fact that airpower staved off defeat, and is now spearheading an advance from several directions which will enable combined United Nations forces—land-sea-air, American-British-Chinese—to win a decisive victory over the common enemy.

The story can be summed up in a few words and phrases which highlight the events: Coral Sea, Midway, Dutch Harbor; Chennault and the Flying Tigers and Fourteenth Air Force; Kasey's bombers and the airborne divisions which saved Port Moresby, Buna and

Seal, conquest of the Solomon, Gilberts, Marshall; Rabaul and northern New Guinea. Victory in the air has enabled the naval and ground forces to defeat the enemy, and to advance here slowly, there by leaps and bounds. Airpower must be taken in the broadest sense, including air bombardment, air fighting, air reconnaissance and air transport.

**Europe and Africa**—In the west, the case is not so clear-cut, though some examples are outstanding. The battle of Britain witnessed a strategically armored RAF defeating in the air an essentially ground-minded Luftwaffe in Africa the initial use of admittedly superior airpower in the ebb and flow campaigns under Wavell and Auchinleck was disappointing. However, following the break-

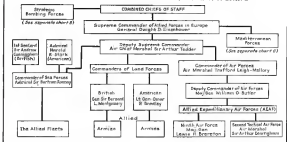
## Invasion Tools

The American drive in the Pacific, already well underway but still destined to reach its peak, will require millions of dollars in ground equipment in addition to aircraft, according to AAF logistic officers.

Maj Gen W. D. Sigon, chief of staff of the Army Service Forces, reported orders have been placed for thousands of bulldozers, barges, tractors, portable sawmills, bridges, pipelines, lumber and other material for construction of ports, landing fields, and roads, plus generators, well-drilling rigs, steel for hangars and housing, petroleum products, single clothing, medicine, refrigeration units.

through at El Alamein, a new pattern of tactical airpower came into its own. Tobler, Spaatz and Cunningham are the air leaders associated with the new air blitz, and Montgomery is the outstanding ground champion. His essence is contained in the opening words of the War Department regulation FM 100-28, Command and Employment of Airpower: "Land Power and Airpower are co-equal and interdependent forces, neither is an auxiliary of the other. The gaining of air superiority is the first requirement for the success of any major land operation." The inherent flexibility of airpower is its greatest asset.

### FOR COMBINED OPERATIONS AGAINST THE CONTINENT OF EUROPE



► **How It Worked**—The air part of the successful Tuscan campaign may be summed up in 4 phrases:

- Countering air force activity, neutralizing enemy airfields and shooting his planes out of the sky.
- Isolating the battlefield by preventing supplies and reinforcements coming by land, sea or air.
- Attacking ground objectives in close cooperation with the ground forces.
- Long range strategic missions against the enemy's productive capacity and lines of communication.

Worked in Africa, in Sicily, at Salerno, though it was sap and took there for a couple of days, owing to the distance from our fighter bases. Despite the present

statewide and the relative failure at Cassino, there are indications that it has been partly successful in Italy, with final returns not in until there has been a reasonably long spell of decent weather. Check on this about June 1. With practically the entire first team of the African campaign meeting the overseas objective, with Toddler as deputy supreme commander, there is no doubt that its biggest trial is just ahead, adjusted to meet the new conditions.

► **Air Objectives**—One of the great strategic objectives of the war already has been gained in the possession, on the soil of southern Italy, of a great air base for striking at Nazi war production located

## 40,000 Navy Flyers

The Navy added 20,000 pilots to its air force in 1943, and the total now is about 40,000, according to Navy Department officials. This figure includes the Marine Corps. By next January it is estimated the number of pilots will stand at 50,000, with the ultimate goal now placed at about 55,000.

Adm. Ernest J. King announced Jan. 30 that Navy, Marine and Coast Guard had about 21,000 aircraft, including trainers and transports, while James Forrestal, Under-Secretary of the Navy, has announced a group of West Coast convertibles that 13,000 combat planes were built in 1943 for the Navy, bringing the number of combat planes—after losses—“nearly 34,000” against 3,800 in existence in Jan. 1943.

“We completed six aircraft carriers of the Essex type—21,000 tonsers, and nine light carriers of the 10,000-ton converted cruiser type, as well as 50 escort carriers,” said Forrestal.

beyond the effective range of bases in England, and for air operations in the Balkans, behind the retreating dragons of the Wehrmacht. Another strategic objective is the destruction of the Luftwaffe—in the air, on the ground and on the production line.

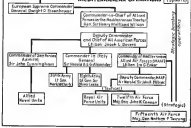
That a good start on this has been made is hardly to be denied, and with three or four months of average weather, with a few spells of better than average, such as obtained in the week of Feb. 30-28, this part of the job should be well on the way to its conclusion. Then, and on a progressively greater scale as this particular goal is approached, the final air objective can be achieved: “The destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people to the point where their capacity for armed resistance is totally weakened.”

► **Tenacity the Final Word**—Certain manpower has its limitations, as does land power and sea power. These fighting forces, with their vast service and supply organizations, plus the production lines and the home front in general—all are needed, with the hardest fights still ahead. NAVIGATOR.

## LEADERS IN THE COMBINED STRATEGIC AIR OFFENSIVE AGAINST GERMANY



## ORGANIZATION FOR MEDITERRANEAN OPERATIONS



**Phillips**  
present production of  
**100-octane gasoline**  
could fuel enough  
Flying Fortresses  
to drop  
600 tons of bombs  
on Berlin every day



PHILLIPS PETROLEUM COMPANY, BARTLESVILLE, OKLAHOMA  
A major supplier of 100 octane gasoline to the Army, Navy, and United Nations air forces

## PERSONNEL

Alfred B. Bennett, widely known flyer and airplane designer, has been appointed director of post-war sales for Hercules Aircraft Corp., Middletown, Ohio. In announcing the appointment, Civil Production Administration president, said Bennett's addition to his firm places the company in a very strong position, since Bennett was "the foremost manufacturer of military aircraft before the war." A graduate of the University of Pennsylvania, where he majored in engineering, Bennett took flight training in the Army at Brooks Field, Tex., and in 1931 established his own flying field with a single second-hand Grumman type plane. From that small beginning he has climbed to be recognized as one of the leading personal pilot sales experts of the country.

Robert G. Larson has been named procurement director for Republic Aviation Corp., Farmingdale, L. I. Larson, a Navy man in the World War, joined Republic last July as manager of subcontractors. He was formerly associated with General Motors Corp. an aviation investment instructor and regional manager.

Joseph F. Ripley, New York investment banker, has been nominated to fill a vacancy on the Board of Directors of United Aircraft Corp. He was a director of United Aircraft and Transport Corp., from its organization in 1929 until its dissolution in 1934. He then became a director of United Air Lines Trans-



Ripley

port Corp., one of three successor companies serving until a year ago. Ripley is chairman and a director of Harrison, Ripley & Co., Inc., New York, and a director of Brown, Harrison & Co., Ltd., of London.

Carey E. Hood has been named chief traffic dispatcher for TWA at La Guardia Field. The post is one of three established with the opening of a new system of coordination between traffic and operations departments. Chief traffic dispatchers also are stationed at Kansas City, Burbank, Calif. The New York office controls loads through all TWA stations east of Chicago.



John Paul Eubank, president of the Eubank-Riddle School of Aviation at Miami, and Ben Paul, Miami, has returned from Miami to be associated with Adams Palm, an executive of the company.

Jay Albion, who has been in the public relations office of American Airlines in Washington, has been transferred to the New York office.

Comdr. John D. Hays, USN, has been detached from the office of the assistant chief of the Navy's Bureau of Aeronautics where he served as coordinator in industrial matters for lighter-than-air craft.

Comdr. G. Turner, chief electrical engineer of the Miami division of Consolidated Vultee Aircraft Corp., has taken over duties as assistant chief industrial engineer of the San Diego division.

Comdr. B. E. Stiller, USN, has been appointed to the Maryland State Aviation Commission. He is senior air officer at the U. S. Naval Academy. Commander Stiller replaced Ensign Comdr. J. E. Lippert as a member of the commission.

Two representatives of South American air missions have arrived in the U. S. Juan De Goya, representative of the Brazilian Air Ministry in Miami and also a member of the Brazilian-United States Defense Commission, has returned from Havana, and Col. Paul Gonzales Nolas, Chief of the Chilean Air Mission at Washington, has returned from Chile.

Karl F. Groke (photo) has been appointed manager of the newly created corporate investigation division of Douglas Aircraft Co. The commission will formulate and



administer, through present company division channels, necessary company-wide policies and procedures essential to any industrial, commercial or transportation of supply contracts with the government and all subcontractors and purchase orders related to such contracts. The committee is composed of R. V. Hunt, vice-president and controller, and F. W. Goss, vice-president of manufacturing and Groke as members.

Comdr. Geoffrey A. Smith, USN, has been detached from the Production Division, Navy Bureau of Aeronautics where he was head of the materials and resources branch.

Charles Kestler, Jr., in project representative of the new Douglas Aircraft Co.'s A-36 attack bomber division. Starting in the Santa Monica plant in 1936, Kestler worked in the early development and construction of the



Kestler

Comdr.

A-36 bomber. John E. Conrad heads a new type of division at Douglas Aircraft. He has been appointed properties manager for the company at Long Beach. The properties management division has been established at the Tulsa plant and is concerned with analyzing the functions of plant equipment, layout and testing systems to obtain a maximum of contribution and a minimum of duplication of effort.

## NOW! A flush door lock for aircraft

Projecting door handles are eliminated by the new Hartwell flush door lock. It presents a smooth, flat surface; improves streamlining and aids performance. The lock comes equipped with mounting plate, variable skin-thickness adapter plate, and a key

lock, which is built into the push-button control. Designed for fast warplanes, the new Hartwell flush door lock will be a streamlining asset on all peace-time planes. Write our Los Angeles office for complete engineering details for this "Afrag" door lock.



**Push-button release.** To open the plane door from the outside, the release button is pressed, as shown here. This permits the recessed, octagon-shaped handle to slide forward.



**Convenient grip.** In the released position, the handle—measuring 3 in. across—provides a convenient grip. It can be pushed back into place from the outside, or pulled flush when the door is closed from the inside.



**Profile of handle.** This cutaway view of the Hartwell flush door lock shows how it looks installed. It can be adapted to doors of varying thickness by lengthening or by shortening the inner door handle shaft.



Patent Pending



**Flush mounting is assured.** A designed, variable skin-thickness adapter plate, riveted to the mounting plate, assures flush mounting. The airplane manufacturer is required only to make a circle cutout for the door lock.

Single source for 779 different aircraft production parts and tools

**HARTWELL**  
AVIATION SUPPLY COMPANY

2417 Cordova Boulevard, Los Angeles 16, California  
Buffalo, Texas • Detroit, Michigan • Kansas City, Kansas

Sylvester J. [Rear] Holt, for the past four years general manager of Consolidated Valves and Airplane Accessories in Buenos Aires, has been appointed assistant to the general traffic manager with headquarters in New York. Before leaving general manager of Compensa de Avionica, he was commercial representative for Pan American in Venezuela and the Caribbean area.

Kenneth L. Wilson has been named branch manager of the Minneapolis-Thompson Engine Co., Detroit office. Previously Wilson has been industrial manager of the Brown Instrument Co., subsidiary of Minneapolis-Thompson. Mr. J. McCallahan and Jack E. MacConnell have been placed in joint charge of the Detroit Instrument sales for the Brown Instrument Division of the Cleveland office.

Major Harry Trueman has replaced Loren Oak George M. Scales as AAF resident representative for the Tacoma division of Consolidated Valves Aircraft Corp. Colonel Scales has been transferred to the Boeing Aircraft Co., of Seattle. Major Trueman was at the San Diego division of Convair.

E. D. Moss, former chief of receiver development at the radio division of Bendix Aviation Corp., in Baltimore, has been named Pacific Coast branch manager of the radio division of the same company. His headquarters will be in North Hollywood. The branch office will work on new radio installations and to improve satisfactory field performance.

Transcontinental & Western Air, Inc., has announced three promotional shifts in the sales department. Kenneth C. Fennel, 14 years with TWA and district manager at St. Louis, has been appointed assistant to W. W. Cople, district traffic manager with headquarters in Kansas City. John D. Thomas, reservation manager in New York, has been shifted to St. Louis and W. J. McDonald, Jr., chief reservations control representative in New York, was named to Thomas' former post.

Capt. John B. Pearson, USN, formerly head of the fighter plane design branch of the Navy Bureau of Aeronautics' engineering division, has been detached.

H. H. Epstein, chief project engineer at Globe Aircraft Corp., has been named to the Advisory Board. Representative Committee of the Aeronautical Chamber of Commerce.



#### 15-YEAR PIN PRESENTED:

C. F. Weaver, western superintendent of recreations for American Airlines, is presented with a 15-year pin at Los Angeles by A. R. Deane, Jr., American's Western traffic manager.

Squadron Leader E. Dickinson, RCAP, is officer in charge of the airworthiness of all Boeing-built C-47s at the Boeing Aircraft of Canada, Ltd., Vancouver plant. He was formerly resident supervisor for RCAP at the San Diego plant of Consolidated Valves Aircraft Corp.

Hall I. Holsted vice-president and chief engineer at Lockheed Aircraft Corp., is head of the engineering



#### GETS WORLD WAR MEDAL:

Capt. E. F. Whitaker, military-side pilot with Delta Air Lines, shown belatedly receiving the Purple Heart for wounds received in World War I. The award was made by Lt. Col. C. D. Wright, deputy commanding officer of Sulman Field, Moore, La., where Whitaker posted during the field on his regular passenger run from Dallas to Fort Worth.

departments of Factory A and Factory B that have been consulted to permit more effective utilization of overall corporate facilities and personnel. MacNair, formerly vice-president in charge of the Factory A engineering branch, will be vice-president in charge of special Navy projects. A. G. Meyer remains as assistant to Short and J. B. Wassil formerly chief engineer of Factory A, will continue in charge of operations in that department, reporting to Hilliard.

Rear Admiral A. W. Radford, USN, has assumed duties as assistant to the Deputy Commander Naval Operations (NAOP), having relieved Rear Admiral F. D. Wagner, USN, who has been assigned to sea duty. Admiral Radford will act as assistant to Vice Admiral John S. McCain, USN. He was formerly director of the Aviation Training Division and more recently served in a command post in the Pacific.

The former vice-chairman of the War Production Board and former head of the Army-Navy Munitions Board, Ferdinand Eberhart, president of F. Eberhardt & Co., Inc., was elected, together with Roger J. Wainwright of the Washington (D. C.) law firm of Wainwright, Hurl and Carmody, Fred Jones, head of many Ford agencies in Oklahoma, and George A. Butler, senior member of the law firm of Butler and Dixon, Houston, Tex.

Four new members of the Board of Directors, two from Eastern firms and two from the Southwestern section, were elected at the annual meeting of World Airways stockholders in Dallas.

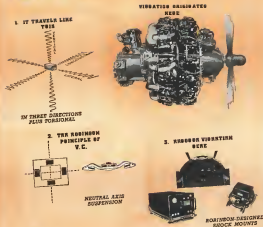
### Weatherill Medal Awarded duPont

Richard C. duPont, who was killed last year in a glider crash, has been awarded, posthumously, the John Price Weatherill Medal of the Franklin Institute for his work in development of jump-up service to small communities. The medal will be presented April 18.

duPont, president of All American Aviation Inc., was serving in the Army at the time of his death, working in the glider program, a field in which he had been interested for years.

Westenberg, Kansas—A second medal will be awarded William F. Westenberg, of General Electric Co.'s research laboratory, for development of a transducer used in the industrial X-ray units used in many aircraft manufacturing plants to inspect parts.

## What's the Answer to Vibration Control?



ROBUST

### Rubber in Compression

Laboratory and flight tests of vibration control equipment to absorb shock and cushioning. It is found that conventional shock absorbers, using bonded rubber like type mounts, absorb vibration in only one direction, and within a limited frequency range. This type of shock mount amplifies vibration in other directions, due to mechanical rigidity or "stiffness." In addition, the conventional shock absorbers do not control torsional or rotational vibration.

Robinson engineers have found that suspensions based on the double Neutral Axis principle, using sponge rubber in compression, furnish tremendously improved performance.

absorbing vibrations from all three directions and not just vertical impulses. The rubber acts, mechanically isolated, not as a deflector vertically, laterally, and longitudinally.

As a result, airplanes, rockets, and instrument manufacturers are rapidly adopting Robinson-designed and built shock absorbers for protection of their equipment.

Because of these developments, you will want to know more about this new principle Robinson-designed shock absorbers are being adopted in a variety of uses, and our new booklet, VIBRATION CONTROL BY ROBINSON, describes the Neutral Axis principle and its various applications. Write for a copy today.

ROBINSON AVIATION, INC.

730 FIFTH AVENUE • NEW YORK 19, N. Y.

# FINGER-TIP CONTROL for MARTIN

## A G-E Engineered System That Facilitates Accurate Aiming at 300 Mph

Many fighters bearing 'round a bomber can make things tough for a turret gunner. But one thing now made easy for him is the control of his turret—a job that a G-E control system can do electrically.

In a Martin turret, the gunner does not have to move the guns themselves. He simply turns his control handle: the turret and guns move correspondingly. Smoothly, quickly, and without effort, the gunner is able to train and hold his guns on the enemy plane.

Exactly what this highly successful system

comprises and how the various elements are connected cannot be told. But typical components are described at the right.

Designing and producing aircraft systems for flight, radio, and power plant control is becoming an increasingly important phase of General Electric engineering. For information regarding available systems, and consultation regarding new projects involving electric control, write to the nearest G-E office. General Electric Co., Schenectady, N. Y.

Typical G-E control system for Martin turret under firing conditions



# TURRETS

## The G-E Turret Speed- control System

This typical G-E aircraft system facilitates control of the turret and its guns. While its layout and equipment specifications cannot be revealed, components include the following:

**1. TURRET DRIVE MOTOR.** Standard G-E 24 volt d-c broadcast-duty unit of rigid construction and light weight. Equipped with steel shell, chamfers or magnesium and shields, and double shielded ball bearings.

**2. AIRCRAFT AMPIDYNE.** Provides enormously amplified power (up to 10,000 to 1) from low control-field excitation, and instant response, ensuring smooth, dependable performance under rapidly changing conditions.

**3. REVERSE-CURRENT RELAY.** Automatically connects or disconnects generator from bus. Opens make contactor on reverse current of about 15 amp. Will interrupt reverse current several times rating of relay.

**4. VOLTAGE REGULATOR.** Controls generator field current and maintains constant voltage under varying generator speed and load. Equipped with equalizing coil for equal division of generator load in multi-engine aircraft.

**5. AIRCRAFT D-C GENERATOR.** Supplies electric power for G-E "power packages" and other electric equipment, as well as for turret. Especially light in weight, with high overload capacity. Speed shaft construction withstands vibration and torque pulsations.



**PRECISION PRODUCTS  
AND ENGINEERED SYSTEMS  
FOR AIRCRAFT**

**GENERAL ELECTRIC**

PLANT



## Wright Reports New Cooling Fan Gives Sharp Boost to Motors

Company says device gives 536 extra horsepower per engine at 30,000 feet, based on engineers' tests, and raises climbing speed 20 percent and greatly increases load capacity.

Increase in rate of climb, gross load, cruising speed and high altitude performance are claimed by Wright Aeronautical Corp. through use of a new cooling fan for air-cooled aircraft engines.

Myron E. Gordon, vice-president and general manager, said that flight tests of the Wright cooling fan have shown that it increases a plane's rate of climb as much as 20 percent and that it increases the payload of some types of twin-engine airplanes several thousand pounds. Gordon sees the device as of great advantage on large flying boats and heavy land-based bombers or cargo carriers.

Tested at 30,000 Feet—Wright test crews, he added, found that on a plane moving at a long-range cruising speed of 150 miles per hour at 30,000 feet without an engine fan, a total of 458 hp was required for each engine to overcome the drag of cooling air and the engine cooling while, with a fan, only 120 hp was required, thus giving the plane

338 more horsepower from each engine to increase its speed and still retain the same fuel economy.

The cooling fan was developed in cooperation with engineers of the armed services to solve two problems which have developed as the power of engines and the speed and load of planes have increased. There was the problem of speed-killing drag created by the cowling and the flow of air through it, and the problem of cooling the engine under difficult operating conditions, such as a steep climb or long idleness with a heavy load.

High Pressure Maintained—The cooling fan maintains a high pressure flow of air through the cowling, even with the flaps closed and, in addition, the exhaust air is pushed out into the slip stream at high speed, instead of seeping out as a slow, dragging mass. The fan also permits the engine to be run at high power for long periods. Since temperature is the main limiting factor on how long full power

can be maintained in an engine, the cooling fan plays an important role when the plane is moving at a slow speed, on takeoffs, steep climbs and long taxi runs.

The fan is also important at high altitudes, since the thin air at stratosphere levels is needed in greater volume to cool the engine for cooling purposes. On planes without a fan the cowling flaps must be opened at high altitude to increase the flow of air, again creating a drag.

The new fan, Wright engineers say, not only overcomes this drag, but under some high speed conditions actually gives the plane additional forward thrust, due to the jet-like action of air being expelled from the cowling at high speed.

Uses Less Power—While a small amount of power is necessary to turn the fan, the amount required is only a fraction of the total gain in useful power which makes the fan possible. Likewise, it adds some weight to the engine installation, but this is largely balanced by the elimination of moving parts on the ordinary type of aircraft cowling.

Wright engineers, who have been working on the new project and that the Germans have a similar type of project under way. However, they added, the art of cooling deep cooling fan on cylinder barrels has reached a higher peak in the United States, with resulting better cooling even as engines moved upwards to 3,000 hp and more. In contrast, they said, the Germans have encountered difficult cooling problems at a much lower level of power.



**Newly Developed Engine Cooling Fan** The newly-developed fan shown mounted on the propeller shaft of a Wright Cyclone engine, and as it appears installed on a plane, has been developed by Wright Aeronautical

Corp. engineers to improve rate of climb, cruising speed, payload and altitude performance. It largely overcomes the speed cooling drag present in older methods of engine cooling and cooling.

# "SOUTHEASTERN"

*the New Name of Georgia Air Service, Inc.*



In order to more accurately describe the scope of our operations, we have changed our name to Southeastern Air Service, Inc. This is a logical step, for the organization which was known as Georgia Air Service, Inc. has "grown up" and renders air service throughout the Southeast. Our organization and our work remain the same. Our war-time job continues to be concentration on Primary Training for the Army Air Forces.

- ★ No Change of Service
- ★ No Change of Personnel
- ★ No Change of Operations

POST WAR PLANS are important, too! The hundreds of pilots, mechanics and aircraft technicians among our skilled personnel constitute a smooth-working machine which can render invaluable service to aviation in the Southeast! Our vast backlog of experience in war flying will be available to both commercial and private flyers through our affiliated company, Southeastern Air Express, Inc. We plan a system of feeder air lines. Southeastern Air Service, Inc., is the name which will designate the fixed base operations. We invite continued contacts from manufacturers and others in aviation who are interested in post war sales, service and maintenance "all over Dixie."



**SOUTHEASTERN  
AIR SERVICE, INC.**

Formerly GEORGIA AIR SERVICE, INC.

Flight Contractors to U. S. Army Air Forces — Bennettsville, S. C. and Jackson, Tenn.  
Executive Offices — ATLANTA, GEORGIA

## B-29 Nears Quantity Output in Five Plants

*Superfortresses* described as most formidable of bombers, although yet to face test of battle.

By midyear, Boeing's Superfortresses will be in quantity production at five of the nation's greatest aircraft plants.

Conceded to be the most formidable of the sky giants, although not yet flown in battle, the B-29 now is being built at Boeing-Wichita Plant 3, Boeing-Renton, Bell-Marietta and Martin-Omaha plants. Conversion of Boeing Plant 2 in Seattle has been started and will be completed within several months.

**Light Heavy to Continue**—The Flying Fortress—the "light heavy" predecessor of the B-29—will continue in production at the Douglas and Lockheed plants. All Boeing facilities with the exception of Seattle Plant 1, where experimental work is done, and Boeing-Wichita Plant 1, where *Kaydet P-17's* are being built, will then be devoted to the Superfortress production. Boeing-Seattle will continue to do all engineering work on the B-29.

The Seattle changeover noted here last week will be made within

out shutdowns or layoffs and activities there will be coordinated with those at the Renton plant, so that each plant will be turning out the subassemblies for which their facilities are best suited. During the conversion period, scheduling steps will be taken at the six Boeing branch plants in western Washington so that these plants will be producing Superfortress parts and assemblies for the main plants as the production line goes into operation.

**No Secret**—Philip G. Johnson, Boeing president, and his coordinated program at Plant 2 and Renton will mean that B-29 production will be considerably greater than of completed planes were built at each plant.

That production of B-29's was on the schedule for Martin-Omaha has been no secret in the aviation industry, but public announcement was withheld until a few days ago, when the last Martin B-26 Marauder rolled off the assembly line and all facilities were turned over to speeding production of the B-29. Martin has been converting the Omaha plant for several months, the changeover requiring a \$2,000,000 addition to the main assembly plant. The last Marauder was the 1550th B-26 to be built at that plant.

**Production Gains**—Boeing's Plant 2, the company says, is one of the most efficient in the country, and Johnson revealed a few days ago that production of Fortresses at the plant was nearly one-fourth greater in March than in February, previous high in the company's history, and 34 percent above January's output—which in turn was more than double that of January, 1943.

Johnson said the Seattle plant production exceeded by a considerable margin the output of any other plant, American or foreign. He disclosed that Boeing's production rate has increased more than 499 percent in the past two years with the same number of direct factory workers as at the start of the period. More than 90 percent of the Boeing factory workers are women.

**Airframe Records**—During 1943 Boeing produced an average of 223 pounds of airframe per square foot of factory floor area per month, which compared with 26 pounds for the best light manufacturing, irrespective of type plane produced. Johnson said two pounds was the average of the leading seven bomber plants and 1.3 pounds the average of all aircraft plants.

In setting its March production record—last for the Fort—Boeing figure reached at the Seattle plant was 485 pounds per square foot.

In the same plant, nine-tenths of one man-hour was the year's average for 1943 required to produce a pound of airframe. Johnson said that 1.1 hours was the record of the next heavy bomber plant, 1.9 hours that average of the leading seven heavy bomber plants and 2.6 hours the average of the aircraft industry. In March, Boeing man-hours per pound were 4.6.

## Portable Heater

Development of a new portable heater is announced by Surface Combustion, Toledo, which ascribes countless applications for the unit, including warming aircraft engines, cockpit and cabin on the ground and drying out of submersibles and instruments in airplanes in warm climates.

The new "Janziro" portable heater embodies the same "chamber" combustion principle as the new Janziro aircraft heater which the company, in cooperation with air force engineers, perfected and recently announced.

# Simmonds *PUSH PULL* Controls

## win the *YELLOW DOT* of Army Air Force Winterization Approval

As a result of their proven performance under severe Arctic conditions, Simmonds-Conkey Push-Pull Controls have won new honors—the Yellow Dot of approval by the U. S. Army Air Force Winterization Program. Thousands of hours of operation at temperatures down to 65 below zero have confirmed laboratory experiments which indicated the low frictional qualities of these controls.

More than 250,000 of these precision-built controls have been installed on the fighting planes of the United Nations, including the leading U. S. military and transport aircraft. Because of their wide range of applications, they are being used also for marine and automotive units.

### Simmonds Equipment Fits With Every Type of Allied Aircraft

Aircraft Engine Controls • Chromed Steel Rods • Hydraulic Actuators • Self-Lubricating Rod End Bearings • Control and Push Clips and Fasteners • Push Pull Control Equipment and Components for Hydraulic Systems • Dash Pumps • Hydraulic Pumps •

Simmonds Aerostocks 84 Canada, Ltd.  
300 Life Building, Montreal, Canada

**SIMMONDS**  
RE-DESIGNED FOR THE FUTURE

30 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK  
4121 HOLLYWOOD BOULEVARD, HOLLYWOOD, CALIFORNIA



## CANADIAN HELLDIVERS ASSEMBLY LINE

Part of the extremely fine Curtiss Helldivers being built at the Fort William, Ont., plant of Canadian Air and Power, Ltd., for the United States Navy. The Fort William plant employs 1,600 men and women and is one of two Canadian plants making the Helldiver. The two Canadian plants, according to official Canadian statements, are making one-fourth of the total production of this dive-bomber.





# UP WHERE SAW MILLS HAVE TO BE FLOWN IN, Bowser Engineered Airport Fueling Systems



Among the toughest aviation jobs of recent years was the installation of Northwest Airline's route from Minneapolis to Fairbanks, Alaska. It was largely through previous ownership, none of it isolated that air transport was called on for many obscure jobs. For instance, a 34-bed hospital, complete with X-ray machine, was flown in by a new unit. That gives you an idea of the country... and the installation problems.

Bowser Aviation Fueling Systems were chosen for two major reasons:

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Serv-A-Plane serves clean, dry, safe fuel



## Top Air Executives Join ACCA Board

More seen as important step in revitalization of Chamber.

Top executives of the aircraft manufacturing industry will be named to the Board of Governors of the Aeronautical Chamber of Commerce last week in what should be an important step in the revitalization of the industry's national trade association.

Revitalization of the Chamber is long overdue and the necessity for a strong, alert and vigorous trade association is now generally recognized within the industry itself, as is shown by the willingness of important associations to give their time and attention to the work of the organization.

**Meet in Los Angeles**—Organization of the new board and the expected election of Donald Douglas as its head, will be accomplished next week in Los Angeles in connection with the meeting of the National Aircraft War Production Council, whose members also are members of the Chamber.

The aircraft industry, which has jumped from 4th to first place among the industries of the country, is one of the few major industries which does not have a unified post-war policy. True, many of the industry's top executives have expressed themselves on various phases of the future of aviation, but the industry as a whole has been sadly lacking in united action on problems vital to its existence and to the economy of the nation as a whole.

**Outlook Brightens**—With leading executives ready to accept the responsibility which membership on the Chamber's board of governors entails, the situation takes on a brighter hue than it has had for more than a year, when the aircraft manufacturing industry—or a good part of it, set upon its own trade association and rendered it almost impotent and inert.

Three departments of the Chamber have done program duty in carrying on their important work under great difficulties: the Technical Department, Traffic Department and the Economic Development Department. These departments and other Chamber activities can perform an important function for the industry if they get proper cooperation.

Those named in addition to

Douglas were: J. H. Kesselberger, North American; Robert E. Gross, Lockheed; Harry Woodhead, Consolidated Vultee; P. G. Johnson, Boeing; T. Claude Ryan, Ryan Aeronautical; Guy W. Vaughan, Curtiss-Wright; E. E. Wilson, United Aircraft; Glenn L. Martin, the Glenn L. Martin Co.; Victor Brenner, Aviation Corp.; Alfred Harber, Republic Aviation; Ernest E. Brown, Bendis; H. E. Gilmer, Sperry; Clayton J. Brubaker, Waco; and J. Carlton Ward, Jr., Fairchild.

**Quality Stressed**—The mission, recently returned, has made no public report on its activities and more is expected, because of the secret nature of the documents.

T. P. Wright, director of the Aircraft Resources Control Office, played an important role in both missions. He is known to favor concentration at this time on quality as schedules are being met regularly and to believe that air power is the main factor in winning the war.

At the time of Munich, Germany had about two and one-half times as much aircraft production as England and France and at the time of Pearl Harbor, aircraft output of the United Nations was about level with that of the Axis.

## Plane Improvement Aim of U.S. Mission

Striking evidence of the progress of the aircraft production program in the nature of a recent United States mission to Britain, which concerned itself with technical subjects designed to improve American and British craft rather than to increase output of planes.

High ranking officers of the Army Air Force and the Navy Bureau of Aeronautics, together with a civilian expert, met with their opposite numbers in Britain. The subjects considered were in sharp contrast to those which engaged a similar mission about a year ago, when ways and means were being sought to increase aircraft production.

**Troubles Axis Output**—But estimates now have it that United Nations' production is three to four times that of the Axis. In addition, our numerical superiority continues as enemy aircraft are destroyed by aerial bombardment.

Results of the recent mission undoubtedly will not show immediately, but the aircraft industry generally is expected to benefit, not only until hostilities have ceased but thereafter as a consequence of the meetings in Britain and inspection trips made by the United States mission.



## CHRYSLER PLANT WORKERS 65 PERCENT WOMEN:

Women's natural skills, supplemented by company training schools, are turned here to mass production of center drive sections for disc brakes at a plant of DeSoto Division, Chrysler Corp., where more than 65 percent of the aircraft workers are women. Similarly, at other plants in the aircraft industry, the percentage of women working particularly with the Selective Service emphasis on men under 35.

## Soviets Watch London Talks As Own Parley with U. S. Opens

China agrees to join in bilateral conferences conducted by America but no official date has been set; Berlin returns.

United States and Russian aviation conferences are scheduled to begin their exploratory consideration of mutual post-war air problems this week against a backdrop of only moderately successful talks in London between American and British officials.

Russian observers, it may be assumed, closely followed the London talks for whatever light they might throw on Anglo-American air policies. It is the view of some of the best-informed aviation circles here that Russia's attitude will be conditioned considerably by air arrangements Britain and America may make with respect to a variety of complex matters such as use of bases on international routes, disposition of surplus aircraft, subsidies, etc.

► **China to Join in Talks**—It was learned officially, meanwhile, that China has agreed to join in the bilateral talks the United States is conducting, but no date has been

established for this participation. Assistant Secretary of State Adolph Berle, Jr., returned from London last Wednesday after several days of conferences with Lord Beaverbrook which, so far as the public has been told, resulted only in the conclusion that the main points of difference between the two countries could be negotiated at an international conference.

► **Beaverbrook Statement**—This was the gist of a statement issued by Beaverbrook's office, saying there was "sufficient agreement between them to justify the expectation that final dispositions can be reached at an international conference." It appeared, as forecast last week, that most of the delicate problems confronting the two countries must await consideration on a higher official level.

The conference also announced that they had agreed "that international control should govern a considerable field of technical mat-

### Agree on 2 Points

The Berlin-Beaverbrook exploratory conference on post-war aviation is reported to have reached accord on two points of vital interest.

"These are that each nation shall decide for itself whether one company or competing airlines shall carry the flag in international aviation after the war, and determine its own schedules depending on economic considerations."

ters." These matters were not specified, but in view of the fact that the United States is far less avid about international controls over aviation than is Britain, they probably deal only with safety standards, weather reporting and similar details.

► **Warner Says Open**—Civil Aeronautics Board Vice-Chairman Edward Warner remained in London an extra day or two, presumably to canvass further the technical field, he was expected in Washington as this issue went to press.

Berle, on the basis of reports from London, both private and public, apparently advised the announced purpose of his visit. That and no more. He held exploratory talks and discussed agenda for an international conference. Nothing, apparently, was settled.

► **Explanation**—Aviation observers have offered several explanations

### NORWEGIAN AIR OFFICIALS VISIT PCA

Photo shows leading aviation figures of the Norwegian Government visiting the PCA and shops of Pennsylvania-Central Airlines. Left to right are Consul R. Guller, air attaché of the Norwegian embassy, Knut Sævi, member of the Royal Norway

Air Transport, PCA president and host, C. Bedell Adams, PCA vice president, "Duke" Cuckwell, Admiral Armand Schjold, chairman of the board of the Royal Norwegian Air Transport, Capt. Miron Krog, RNAP, assistant air attaché, Ralph Manchester, PCA.

for the seemingly unfavorable outcome of the London talks. They point first and foremost to the attitude of Congress, which is not yet well defined as yet, but which nevertheless appears to diverge considerably from the views held by Berle and certainly would never support the degree of international control proposed by Britain. It is pointed out also that Berle had very restricted authority, was confined mostly to expressing negatives, and could make no statements even bordering on commitments. A report was current in diplomatic circles at the week-end that the British were "very disappointed" by the outcome of the conference, believing that Berle and Beaverbrook did not get along at all well.

The Washington atmosphere, meantime, is charged with speculation about the Russian-American talks. No one could be forced who pretenses to have even a remote idea of the Soviet's ambitions, and for that reason all manner of guesswork is being done.

► **Soviet Ambition**—Russia's place in post-war international aviation apparently will be determined by her decision regarding participation in a general United Nations organization and the development of her domestic economy.

CAB Chairman L. Welch Perce, technical adviser to Joseph C. Henshaw, head of the U. S. delegation for the Russian talks, believes Russia and this country may develop a considerable commercial rela-

tioning which would stimulate the development of air services.

Other sources suggest that Russia and America will not be very far apart on aviation matters unless Britain and America form too close an association with respect to international air commerce, which thus far appears unlikely.

► **Speculation**—Still others say Russia may intend to develop her aviation service and stay out of the international field for some years to come. And some point out that if Russia intends to have a sphere of influence in eastern Europe, she surely will exploit that region's air traffic possibilities.

These brief bits of speculation are sufficient to demonstrate that U. S. officials go into talks with Russia without the slightest idea of what the Soviet's desire.

Officials say the same points will be discussed with Russia that were discussed in Britain.

### New Air Route

Use of a new route from Great Britain to Edmonton, Alberta, by the RAF Atlantic Ferry Command was disclosed early this month when one of the Command's two-engine planes landed at Edmonton 344 24 hours after it left Britain.

Later, two other RAF Ferry Command planes took off and flew the same route, details of which were not revealed, back to Britain. Edmonton is the southern starting point of the Alaska Highway and highway.

### Major Lines Assail CAB Feeder Report

C & S opposes move to bar big companies from cities under 25,000.

Views of the major airlines, as expressed by their counsel in the local-feeder-packet oral arguments before the Civil Aeronautics Board, differed sharply last week with the report of Economist Magazine and *Aviation*. The Board now has the case under advisement.

Opponents of exemptions that major lines should be barred from cities of less than 25,000 population was attacked by counsel for Chautauque and Southern, who said such cities could be served more adequately as stops on a larger system than by local service. He said his line has applicants to serve some cities of this class already on file.

► **TWA Clarifies Stand**—Counsel for TWA took issue with the claim of the Greyhound Corp. that it intended only local service in its numerous helicopter applications, contending that the real situation of the company was to establish an entering wedge in long haul air transport.

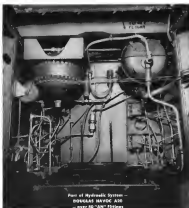
Much of the argument revolved about the issue of surface carriers as air operators, many who appeared differing sharply with the Board's interpretation of the Civil Aeronautics Act which prevents a surface carrier from entering the air transport picture.



PILOT'S COMPARTMENT AND ENGINEER'S CONTROL BOARD OF THE MARS: Photo taken on the flight deck of the Martin Mars, Navy's 70-ton flying boat and holder of numerous speed and distance records, shows (left) cleanup of



the flight engineer's control board and (right) general view looking forward toward the pilot's spacious compartment.



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## CAB Warns Workers Of Safety Rules

Reminds inspection on aircraft of regulations; four suspended.

The Safety Bureau of the Civil Aeronautics Board has issued a warning to all certificated mechanics regarding violations of the safety regulations governing the periodic inspection reports of repairs and ground work done on aircraft.

Noting an increase in the number of violations of this rule since Jan. 1, the bureau pointed out that the mechanic's certificate issued by the CAA "is both a license and a diploma which certifies to the competency and reliability of the holder."

Four Suspended—Certificates of four mechanics have already been suspended, and six more cases are pending. The mechanics involved had signed inspection reports without having performed the work themselves, or without personally inspecting the repairs. Jesse W. Tarkenton, director of the Safety Bureau, said the Board has no intention of acting as a police agency, but that the warning was issued to discourage any further laxities. He attributed the violations to pressure of work and shortage of certificated personnel.

## Navy Lauds CAA For Nats Radio Aid

Praise for the role played by the Civil Aeronautics Administration's radio stations in aiding operations of the Naval Air Transport Service in the Pacific area was expressed by Rear Admiral Joseph B. Bodman, director of Naval Communications, in a letter to Charles E. Stinson, CAA administrator. In the Pacific, as in many other areas, the CAA radio stations assist and augment the Navy's radio facilities for handling NATS radio traffic.

Cooperation—Admiral Bodman lauded the equipment and operations of the CAA stations was of the highest quality. He also remarked on the willingness of CAA radio personnel to offer extra services whenever requested.

CAA has played an important part in setting up and maintaining a part of the communications network for both the Naval Air Transport Service and the Army's Air Transport Command.

## Super-Service

Good connections and a fast over-ocean flight recently provided a letter posted in Britain by a Canadian serviceman to be delivered to his family at Hamilton, Ontario, the same day.

The RCAF Transport Command and the man, a Canadian aviator, got his letter aboard the "Transport" Command bomber just as it was leaving for Canada. A two-hour time lag and a close connection with a "bomber-bus" express from Montreal on arrival of the bomber there did the rest.

## Two 9th Air Force Command Changes

Two changes in command in the Ninth Air Force based in England include appointment of Maj. Gen. Henry F. P. Miller as commander of the Ninth Air Force Service Command, and appointment of Brig. Gen. Samuel E. Anderson to be commander of the Bomber Command.

General Miller formerly commanded the Eighth Air Force Service Command, being stationed in January by Col. Donald H. Macgowney. General Anderson has served in the Pacific and received the DFC for organizing and directing medium level air operations.

## C & S Asks New Airmail Rate

Chicago and Southern Airlines has filed with the Civil Aeronautics Board a petition requesting Board revision of its mail rate. The current rate of 0.8 mill per pound, fixed by Board order last December, is considered too low.

Renegotiation of contracts unfavorable to the line, increased operating costs despite price controls, and the inability to increase service due to the non-availability of new aircraft were offered as factors adversely affecting the line, which "during certain recent months has actually conducted its operations at a loss."

These factors were not operative during the base period from which the present rate was determined, and the airline desires a hearing for enough in the future to take full cognizance of their effects.

## Formation of New North Atlantic Airline Reported Under Way

"Important interests" in U. S., Britain, Canada and Newfoundland expected to join forces in projected air service.

A new factor has been thrown into the intercontinental air transport picture with the announcement that "important interests" in the United States, Canada and Great Britain would "join with a Newfoundland group in the establishment and operation of North Atlantic air services." United States aviation and official circles gleefully were puzzled, and the suggestions of the project are murky.

Newfoundland is the key to North Atlantic operations over the great circle route. Without it, trans-Atlantic operations, except via Bermuda and the Azores or the South Atlantic, would be virtually impossible for the United States. Labrador, which conceivably could be used as an alternate route, is a dependency of Newfoundland and the announcement of organization of the new company made it plain that the company would demand "reciprocal rights in those countries which may be secured similar facilities in Newfoundland and Labrador."

Key Territories—The company distributes the vital importance of key territories in international airline operations and the uses to which they can be put. The 290,000 inhabitants scattered over the 45,000 square miles of Newfoundland

and the adjoining 110,000 square miles of Labrador would hardly justify an international airline, certainly not on a scope demanding the participation of South, Harvey & Co., New York investment bankers long involved in the financing of American and other air transport companies, and Greenfield & Co., Inc. of Montreal, one of the largest investment houses in Canada, with British interests that are not identified in the first announcement of the undertaking.

It is the first project of its kind, and presents as many possibilities that the full background probably will not emerge for some time. Operating under Newfoundland laws, the company would have wide latitude. And the announcement says "the company has under consideration methods whereby other countries may have an opportunity of participating in the organization. This would tend to strengthen it politically as regards the interrelated character of its geography and operations."

Newfoundland Status—The governmental situation in Newfoundland makes the picture even more confusing, since the North Atlantic island, once a dominion, now is governed by what is in effect a



## BRANIFF WELCOMES NEW DIRECTORS:

Braniff Airways has four new directors, being introduced here at the President's dinner after their month's annual stockholders' meeting in Dallas by T. E. Braniff (left), president and director. Left to right are Roger J. Whiteford, Washington attorney for Braniff; George A. Butler, its legal representative at Houston, Fredrick Everett, whose New York firm has handled both of Braniff's public stock issues; and Fred Jones, Oklahoma City automobile and oil man. Addition of these men expands Braniff's board from five to nine.

traudship. A governor appointed by King George VI, three English commissioners and three Newfoundland commissioners comprise the ruling body. The dominion status of the island was suspended in 1939 in what virtually amounted to a bankruptcy action after almost 64 years as a dominion.

Vice Admiral Sir Humphrey Walwyn is the present governor. The Commissioner for Public Works and Public Utilities, under whose aegis the projected company would come, is a British civil servant of some 40 years' service and he is expected to retire soon, possibly next month. He is Sir Wilfred W. Woods. The appointment of the new commissioner, who will be an Englishman, will therefore be of great significance in the international air transport picture and possibly afford a clue to the attitude the British government is taking toward the project. All foreign relations of the "dominion in suspended status" are handled through the dominion

office in London, which means that the demands of the company for reciprocal rights would be handled through English channels.

**Central Figures**—The key figure of the company in Newfoundland is V. S. Bennett, of St. John's, identified as a business man who served as an RAF captain in the world war. Bennett is Newfoundland representative of Shell Oil Co. and a local director of the Anglo-Newfoundland Development Co., a fisheries enterprise.

The company already has been incorporated in Newfoundland in the name of Air Transport, Ltd. This name, the announcement said, will be changed to North Atlantic Airways.

**Domestic Services**—Services also are being made, it was said, for the provision of internal domestic services "preliminary to passing the resulting recommendations to the Newfoundland government for such action as that government may consider necessary." The Newfoundland government would

be invited to have a representative on the board of directors, and Newfoundland capital interests would be offered participation "on the same basis as those of the other countries."

"Mr. Bennett," said the announcement, "expressed a belief that only by a strong company with international support of this kind would Newfoundland be able to enjoy the full economic benefits to which it is entitled by virtue of its geographical position on the important world air routes."

**Comments**—"Such a project," he said, "will naturally include carefully worked out arrangements with other factors in the transportation field, for establishing airline connections in all the countries concerned."

State Department sources pronounced to be in the dark about the project and said their sole information was derived from the news stories announcing formation of the international company.

## Michigan Maps State Port Program

Michigan Board of Aeronautics has announced a post-war airport and construction and employment program. Recommended by the Advisory Committee on Aviation to the State Planning Commission, the program involves ultimate expenditure of \$75,000,000 for 200 existing and proposed airports.

Indicating Michigan will not wait to ascertain whether the Federal Government will match state expenditures, and backed by a healthy state treasury surplus, the report recommending the program mentioned Federal aid only inferentially. Thomas E. Walsh, acting Board director, stated that "any federal assistance, in addition, would permit a more matched plan and development of fields more consistent with the early post-war transportation requirements."

**Matches Funds**—The state would match funds, according to the plan, for airport grading, surfacing, drainage and lighting with municipalities to the amount of \$50,000,000. In addition to half this sum, the municipalities would be responsible for \$1,315,939 site costs and \$13,337,569 building and miscellaneous costs.

A recommendation that a special session of the Michigan legislature earmark \$2,000,000 to begin pro-

cessing runway and municipal airport planning and construction was withdrawn to deference to the governor's request that no steps not on his agenda be brought up before the regular 1946 session.

## W. A. Patterson Feted on 15th Year

Officers of United Air Lines re-elected at annual meeting.

William A. Patterson, president of United Air Lines, this month starts his 15th year as president of United Air Lines. He and other officers and directors of the company were re-elected last week at the annual stockholders meeting and a subsequent meeting of the board.

To mark completion of his tenth year as president and his fifteenth year with the company, UAL employees presented Patterson with a silver plaque with the names of 677 who have been associated with him in United.

Officers re-elected are Patterson, J. A. Berkey, vice-president, operations; Harold Gray, vice-president, traffic; C. C. Thompson, vice-president, public relations; S. V. Hall and R. L. Dulac, regional vice-presidents, operations; N. B. Harley, treasurer; P. M. Wilson, vice-president, administrative; John W. Newey, vice-president, finance; S. P. Martin, secretary; Curtis



Patterson

Barker, controller, and C. R. Blumhiser, auditor.

Directors re-elected were Martin C. Anspaugh, Justin W. Darr, Paul M. Goodrich, Harbison, John J. Mitchell, Patterson, Geo. Sumner Sewall, Paul G. Hoffman and Gardner Cowles, Jr.

## 18 YEARS AGO THIS MONTH



## Little man, you had a busy day...

You couldn't see over the crowd... and you didn't quite understand what the excitement was all about. But, guess, some of the grown-ups were just around you didn't either.

The big plane steered man they called "Pop" Harbord did. So did the tall fellow in flying suit and goggles named Kelly. They were waiting in air-bus... Western Air Express... to fly the road between Los Angeles and Salt Lake City... and someday passengers!

Sure, "Pop" Harbord knew what it meant. For it was only two years later (you had a even started in school yet) when he was operating big 5-engine planes between Los Angeles and San Francisco, with 12 soft chairs in a cabin big enough to walk around inside... inside in the sky... and hundreds to the airport. They called this the "Million Dollar Airway."

Today they're all "million dollar airways," thanks to men in the aviation industry overhauling flying buses to build better planes to fly faster and carry bigger payloads. Right now these men are helping to win a war but after that you'll see wonderful new planes, offering still faster service at lower costs.

And you'll see, too, that the man who ran Western Air Lines never stop flying faster and cheaper ways to carry passengers and cargo. They'll be PIONEERS.

General Traffic Office: 509 West 6th Street, Los Angeles 14, California



## NORTHEAST'S CARGO BASE MOVED:

Northeast's cargo base for its military trans-Atlantic operation was moved to Logan International Airport at Boston from Presque Isle, Maine, this month by Army. On hand for the first event, a Douglas C-47, were Paul F. Collins, president Northeast (center), and M. H. Andrews, vice-president in charge of operations (right). Collins is greeting Capt. A. K. Chaves of Arlington, Mass. In the doorway (front) are Navigator Des McCallough of New York and Fred A. Waybrough of Waltham, Mass., supervisor of cargo operations, and (rear) Radio Officer E. R. Hardy of Ashford, Mass., and Captain Richard H. Shubell of Shelton, Conn.

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## Air Giants Unlikely, Says Douglas Aide

A spokesman for Douglas Aircraft Co., whose DC-3's today fly most of the nation's commercial fares, says post-war transport planes will not be so large, so fast, nor so futuristic as many people expect. But they will have pressurized cabins and will cruise at better than 350 mph "above the weather" at 25,000 feet.

By 1950, predicts Geoffrey F. Morgan, head of Douglas' "special business" airplanes carrying tons of cargo and 70 to 100 passengers will be commonplace. Largest non-stop trips over land will be 1,600 miles.

✈ **Air Vacations Abroad**—Lacking the advantages and skill of commercial pilots, private flyers will not become so common as automobile drivers, Morgan believes, but he expects that thousands who now dream it possible will be able to fly abroad for vacations.

Morgan made his forecasts in a talk before Pittsburgh's Junior Chamber of Commerce. They were of note that intense interest in a short time before drawings and descriptive matter had appeared on the proposed Douglas DC-7, a post-war air vehicle designed to carry 44 passengers and 25,000 pounds of cargo, or 100 passengers and a moderate amount of baggage.

✈ **Present Types to Predominate**—DC-3's, DC-4's and C-46's will predominate on the domestic airlines for one to three years after armistice, he says. A fleet of fewer than 1,000 pre-war type planes should be able to handle post-war passenger traffic for the next four or five years. Huge planes for several hundred passengers are technically feasible but the equipment now will depend on economy. Design will be conventional for five or ten years. Delivery of goods by parachute might prove practical.

Military air transport commands have given tremendous impetus to world-wide commercial operations. Mr. Johnston appears to favor competition rather than the "chase or instrument" policy. He says the Martin More is probably the most efficient cargo plane built so far. He real volume of Atlantic passenger traffic will develop with present fares are out in half. Chances of such a cut in five years are not good. Atlantic fleet requirements might be fifty 50-passenger planes at the end of five

years and forty 100-passenger planes at ten years. Part of this fleet probably will be flown by foreign operators.

✈ **Post-War AAF**—Mr. Johnston makes an off-the-cuff guess that Army may have a post-war air force of 10,000 planes, Navy 10,000. Replacements would total \$400 per year, one-twentieth of the wartime peak. But war airplanes would fill much of this need for five years or so after peace. The effect of the surplus pool is shown in a chart.

In the aggregate, the expectation is for a total volume of business for the aircraft industry of about one-quarter billion dollars for the second post-war year, possibly one to one-and-one-quarter billion by the fifth year. If all goes well, bulk of this business must come from U. S. Army and Navy. How much of the post-war business will be taken over by automotive people is unpredictable.

Confronted with wartime needs, the immediate post-war picture is indeed bleak, but those who remember the state of affairs in industry in the pre-war decade, will find that real progress is being made and the outlook for the future is most encouraging.

## Application Filed For Seaford Airline

New Bedford, Mass., firm plans service throughout New England and Eastern states.

Transportation of seaford products by air is arranged in an application filed with the Civil Aeronautics Board by Felt Airline Corp. of New Bedford, Mass. The stockholders of the air carrier corporation are also stockholders in a motor carrier company engaged in transportation of property and freight from the New England area to various points in the Eastern States.

The company, which has no aviation equipment at present, has asked for a certificate to cover charter and unscheduled service from the Boston area as far north as Miami and west to Milwaukee.

✈ **School Aids Certificate**—The Ryan School of Aeronautics, San Diego, Calif., has asked a permanent or temporary certificate to operate a feeder and pickup service in California and Arizona. The applicant of present is training flyers in the War Training Service

## Bouquets for CAB

Members of two big airlines have had commendatory words from the Civil Aeronautics Board.

Ralph S. Damon, vice-president and general manager of American Airlines, spoke at the Board's "annual appreciation" of air transportation economics and "realistic approach to the problem of preventing in 1949 the spectacle of the curfew of defense industry companies across the country and aviation industry sound procedure now." It's a spectacle, Damon said, that "could easily take place, except for the war clause" set by CAB.

In another New York talk, William A. Peterson, president of United Air Lines, and "and saving jobs in the air transport business is that we have a Civil Aeronautics Board which we have a real desire to prevent us from destroying ourselves. We have a good law, and we have honest, capable and energetic men on the Civil Aeronautics Board listening to us, and that is a law."

The scheduled service proposed would handle mail, passengers and property in a series of feeder routes: Los Angeles, San Diego, San Francisco, Calif., and Yuma, Ariz., are the chief terminal points requested in the application.

✈ **St. Louis Firm Files**—Another feeder-pickup application was filed by the Krim Corp. of St. Louis, an airport operating corporation. The application requests authorization to transport mail, passengers and property on a scheduled service over numerous routes starting out from St. Louis and reaching into Indiana, Iowa, and Illinois.

A bus company, the Service Lines, Inc., of Atlanta, Ga., proposes to augment its motor carrier operations with a helicopter system. They have filed with CAB for a certificate of convenience and necessity which would permit coordination of the two services. The scheduled service proposed would carry mail, passengers, property and express as routes from Atlanta, Ga., to Gadsden and Anniston, Ala.

✈ **Cokeville Circle Service**—Maine States Aviation, Inc., of Denver, has filed for a certificate to

operate a mail and property drop and pickup service in Colorado on a circle route out of Denver.

The applicant is a sponsor of airports and airport facilities at Denver and Boulder, Colo.

## Damon Urges Cargo Trade Development

AA official tells Security Analysis of airlines' need for passenger and freight service expansion to offset decline in mail revenues.

The air transport industry after the war must place increasing reliance on expansion of its passenger and freight services to counteract the downward trend in unit return on air mail, says Ralph S. Damon, vice-president and general manager of American Airlines.

Stinging out the ability of the industry to develop profit on its cargo (air) as one of many factors in its future, he told the Security of Security Analysts at New York that the possibility of further reduction in fares brings on many things that cannot now be foreseen. Among these are living costs, taxes, and ultimate costs of new equipment. Meanwhile, the development of air freight potential business depends to high degree on efficiency of types of equipment which will be available for passenger use.

✈ **Military Transport**—The work of the Army Transport Command and Naval Air Transport Service, while it has demonstrated feasibility of carriage of heavy cargo, as an criterion for the airlines, in Damon's opinion, because cost was not an important factor.

Currently, he added, air cargo development is almost one of the question because of lack of planes. Here he took occasion to deny lack of information from the Administration as to return of the planes given up by the airlines under Presidential order.

He found the criticism based on unduly in view of high production of transport planes. "The volume of factory deliveries of this type of plane for only one day," Damon said, "would do much to help speed the war work of the domestic airlines in the large proportion of loads that are not."

✈ **Spokes for All Airlines**—Presumably this criticism was made in behalf of all the airlines, since American's share of planes already

returned, including replacements, has been higher than that of any other individual line.

He made a few guesses on likely occurrence in the first five years after the war. Among them:

✈ **Airline service to 1,000 communities in the United States, against 770 in 1941.**

✈ **Flying speeds between five and six miles a minute on the larger hauls.**

✈ **Expansion of the 44,000 route-miles of airways of 1941 to something like 100,000 route miles.**

✈ **Two- or three-fold increase in the number of flights a day over each mile of route, and a five-times expansion in service.**

✈ **Larger planes, seating up to 100 passengers.** These he expects as a sequel to such planes in the Douglas DC-4, seating between 48 and 50, which he anticipates "immediately after the war" in addition to the present DC-3 21-passenger plane types.

In a reference to earlier carriers, Damon said that whatever business air transportation may



## PARATROOPER'S VEST

A new type of vest for Army flyers, which carries a 45 caliber pistol, ammunition, emergency rations and other equipment is enable a parachuting flyer to live off the land until he can return to his base, is worn above by Lt. Col. E. V. Stewart, Wright Field, Colo. Stewart has been training young since 1943, has 421 jumps on his record and was instructor at Fort Benning, paratrooper school, before assignment to Wright Field, parachute branch.



## Commercial Air Transport Growth Revealed in 5-Year CAB Survey

Traffic and financial operations of individual companies during period 1938-42 summarized by Economic Bureau of Rates and Audits Division.

By ROGER WILCO

The phenomenal growth of commercial air transport is the highlight of a five-year airline statistical survey made by the Economic Bureau, Rates and Audits Division, of the Civil Aeronautics Board. Covering the period 1938 through

**Assets Up Sharply**—Current assets grew from \$15,102,681 to \$81,196,528 (up 430.20 percent) during the five-year period, and at Oct. 31, 1942, current assets stood at \$110,055,700. Working capital at Oct. 31 last year was \$37,032,-

and monthly compensation \$2,494,892.

Mail revenue, which in 1938 was over 37 percent of total operating revenue, was down to 31 percent of total revenues in 1942. For the calendar year 1942, the domestic airlines reported aggregate operating revenues of \$1,085,377,990 against operating expenses of \$51,683,740, leaving an operating profit of \$234,644,184. In 1938, operating revenues of \$42,644,121 compared with operating expenses of \$43,483,528, making a deficit of \$1,018,588.

**Revenues Up**—By 1938, operating revenues had reached \$55,947,785 and operating expenses \$31,391,583, making an operating profit of \$24,556,202. A year later operating revenues climbed to \$58,688,642 against expenses of \$20,590,614, leaving a profit of \$38,097,028. In 1941, operating revenues totaled \$77,313,123 and operating expenses \$52,919,133, making operating profit \$24,393,990. An analysis of revenues is shown below.

Analysis of traffic data shows that revenue passenger miles climbed from 479,835,976 in 1938 to 1,632,452,433 in 1942, while revenue passenger load factor was up from 58.44 percent to 68.61 percent. Mail pound miles jumped from 14,680,491.283 to 72,133,899,534, with the largest increase taking place during 1943. Express pound miles rose to 31,257,460,111 in 1943 from 4,384,846,277 in 1938. A breakdown of traffic data is shown below.

## WAL Net Off Sharply

Western Air Lines reports net profit of \$90,194 for 1942 against \$693,705 in 1940.

William A. Coulter, president, gave an analysis for the decline: \$56,606 decrease in airway revenue, a 19 percent cut in passenger fares and 12½ percent cut in express rates July 15, 1943; and increases in operating costs involving increases in wages, materials and supplies, and the addition of new personnel to cover expansion.

WAL passenger revenues in 1943 were up 38 percent to \$1,706,463.

## SEC Reports Ryan Income and Salaries

Net earnings for twelve months ended Oct. 31, 1943, put at \$397,532.

T. Claude Ryan, president and treasurer of Ryan Aeronautical Co., received \$44,588 in compensation during the fiscal year ended Oct. 31, 1943, according to the company's annual report as filed with the Securities and Exchange Commission.

In 1942, net earnings were charged to the company, \$50,000 to the Ryan School of Aeronautics, and \$4,890 to the Ryan School of Aeronautics of Arizona.

**Other Salaries**—Earl D. Prodder, vice-president, received \$21,102 during the last fiscal year, divided as follows: \$3,000 from the company, \$17,800 from the Ryan School of Aeronautics and \$10,100 from the Ryan School of Aeronautics of Arizona.

Edwin J. Malloy, vice-president in charge of manufacturing for the company, received total compensation of \$17,061, all of which was charged to the company.

**Train Army**—Ryan's two aeronautical schools are engaged exclusively in airplane pilot training for AAF.

Total net sales were \$25,326,443, of which \$26,782,554 was from manufacturing operations and \$5,632,933 from aircraft sales.

**Balance**—Expenses, including cost of goods sold, school operating expenses and general and administrative expenses amounted to \$22,343,523, leaving a balance of \$2,982,920. Other income in the amount of \$113,722 brought the balance to \$3,096,642.

After deductions there was a balance of \$2,986,519. After providing \$2,149,306 for normal and surplus federal income tax, and excess profits tax (less post-war refund), there was a balance of \$836,212, leaving, after deduction of \$235,600 for contingencies and post-war adjustment, a net income for the year of \$600,612.

## Braniff Dividend

Payment of quarterly dividend of 15 cents a share for the first quarter of 1944 has been authorized by the Board of Directors of Braniff Airways and will be paid May 15 to stockholders of record May 1.



## HALIFAX AT PROP PLANT:

The British ambassador, Lord Halifax (center), with Gen. Raymond E. Beidart (left) and Raymond E. Walsh, vice-president of United Aircraft Corp., on a recent visit to the Hamilton Standard Propeller plant at East Hartford, Conn.

## Financial Reports

**Canadian Pacific Airlines** reports loss of \$236,573 in 1942. Expansion of radio communication facilities during the year were reported as well as additions to ground equipment, shops and airport facilities, for which the Canadian Pacific Railway advanced to CPA \$2,627,666. CPA transport planes were flown 6,130,761 miles in revenue service, an increase of 20 percent over 1942. Aircraft operated by the air observer schools of the CPA system flew more than 57,000,000 miles during 1942.

**Hawana Airlines, Ltd.** reports net profit of \$125,053 in 1942 after tax deductions of \$368,553 despite reductions in rates, mail compensation rate, and increased operating costs. The company drew \$14,147 in 1943 and reported a 12.24 percent increase in operating revenues, due to an increase in passenger revenue of \$178,953 and in freight revenue of \$178,581.

**United States Pinedrop Corp.** and subsidiaries for the same months ended Jan. 31 reported net profit of \$834,280 equal after preferred dividends to \$136 each on 266,932 common shares, compared with \$287,722 or \$2.64 each on 266,932 common shares for nine months to Jan. 31, 1942; net sales were \$18,107,666 as against \$12,194,540, earnings before taxes were \$2,146,266 compared with \$1,747,023.

## OWI Lays Convaair's Split-Shift System

Convaair feeder shop, staffed by women, reported far ahead of production quota.

Success of Consolidated Vultee's feeder shop at Convaair, which employs only women who work on a split-shift schedule, is reported by the Office of War Information as evidence that a split-shift feeder-shop system applied only by women can be effective.

Since its beginning in May of last year, the Convaair shop has progressed from simple rivet-putting to dashboard panel and booster panel electric wiring. The labor force has grown from 25 to more than 100, plus a waiting list.

**Feeder Shop Idea**—The Convaair feeder shop idea is credited to Consolidated Vultee's head of personnel, Mrs. Max Anne Towers, wife of Vice Admiral John H. Towers.

Of the women in the feeder-shop group, approximately 90 percent are married and 70 percent have school-age children. Several of the workers have cooperative arrangements whereby a worker on the second shift—12:30 p.m. to 4:30 p.m.—takes care of the children of workers on the early 8:00 a.m. to 12:30 p.m. shift. The average weekly pay runs about \$14.

## New Plane Names

The Bell jet-propelled fighter has been named tentatively the Atomcat by the Army Air Forces, while another new Bell plane, already named at the Bell plant, has been christened the Kwagwaka.

The Pinedrop transport designated the C-63, expected to make its appearance this year, probably will be named the Pinedrop. Wood's new twin-engine, specially designed glider, designated the C-64, also has been given an official designation other than the C-63. No deliveries have been made, although deliveries could be out before Apr. 1.

**Build Manufacturing Corp.'s** new standard twin-engine transport, called the Navy production of BR-1 has been named the Conquest. Deliveries are anticipated from now.

A new version of a Douglas bomber is being fitted the D-54-trap.

	1938	1939	1940	1941	1942
Operating	\$4,906,000	\$6,842,711	\$10,000,000	\$10,000,000	\$10,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Operating	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000



## For a Peacetime Air Force Of 50,000 Planes

The United States aircraft industry built 117 planes during September, 1939, when the European war started. Total output that year was 2,499 planes, including scores of trainers. On Dec. 7, 1941, we had 129 four-engine bombers. The Army Air Forces had 1,137 first line combat planes, with only 528 of these strategically located to meet possible attacks on Hawaii and the Philippines. Within a few hours this number dropped to 178. The Japs string of conquests continued with little resistance almost to Australia.

Today's production at 9,500 military planes every month, including possibly 1,500 heavy bombers. We have the world's greatest Military and Naval Air Force, by quantity and quality. Its peak is still unattained. Over half of the Army's total 1944 production represents aircraft and its equipment.

In the heat of battle, on the threshold of the mightiest invasion ever planned, it is time to start planning for the future. To assure ourselves that a phlegmatic peacetime let-down doesn't lay us open to another enemy—or "friend."

The United States must continue to maintain the world's greatest air force, whether it polices others or remains based on American territory. Its very existence will be a powerful deterrent to ill-judged action elsewhere.

Aviation News believes American public opinion will demand that we retain a brilliant air force equalled or exceeded by none in the world, even by our present Allies. This is believed to be the opinion of some of our highest officials. It is a prevailing belief of a group of the most responsible members of Congress.

Such an air corps, and our determination to keep our leadership, will be as powerful a force at the peace table as in the years ahead.

Therefore, the News believes that Congressional plans should encompass the following minimum post-war air program:

1. A peacetime Army and Navy Air Force of at least 50,000 combat planes, plus necessary trainers and military transports.
2. Annual production and replacement of 25,000 of the most advanced combat aircraft.
3. Continuation of what already is the world's best equipped aircraft and equipment research plant, to be maintained by the National Advisory Committee for Aeronautics, plus AAF and naval testing centers, and independent facilities for individual aircraft plants.
4. A continuing national aviation training pro-

gram utilizing private schools, turning out necessary technicians and a minimum of 100,000 private pilots a year as a constant source of potential combat pilots of the required age. This program would be independent of a nucleus training system contained by the services.

5. The world's largest and finest equipped commercial airline system with subsidies only on a few uneconomic but militarily and commercially important world routes. The airlines should retain direct connections with the Army and Navy Transport Services for training and transportation.

6. A peacetime Army Air Transport Command and Naval Air Transport Service competing with no commercial airline, but serving as training and supply agencies.

THE AMERICAN PEOPLE can find little legitimate complaint in the cost factor of an insurance policy with a premium which is hardly more than several of the current 1,000-plane railroads in Berlin. There are other post-war problems to be solved, of course. What about our post-war Army, surface Navy, peacetime conception? The question of implementing the post-war air force must be solved. Will the air force be one of the co-equal arms of a simple department of defense, for example?

It is now up to our Congressional leaders, like Rep. Woodrum and his well-selected military planning committee, to gather the expert recommendations and testimony of our wartime leaders in the services and industry, and prepare a report on which the House can take swift action.

Let them recall these words from Gen. Arnold's classic report to the Secretary of War early this year, listing the Army Air Forces crippling liabilities in the pre-war period:

"These were the lack of funds, the people's aversion to all forms of war which forced us into makeshift methods. The AAF had to teach the nation that large numbers of planes did not in themselves constitute superiority; we had to show the folly of the numbers racket. We dropped different planes to do different jobs, and shouted from the hangar tops that no one superplane could do everything. The people did not realize that the plane had broken down all boundaries of time and distance; that even our island cities were within bombing range of the enemy."

We believe the people realize these things now and that they expect their Congress to start to work now to insure us against another war.

ROBERT H. WOOD

## NOW! IMPARTIAL TEST PHOTOS PROVE WHICH TAIL WHEEL TIRE **HOLDS** BEST



Photo above competitive 6x2.00 tail wheel tire on test machine in laboratories of Scott Aviation Corporation—being rotated at equivalent of 30 miles per hour. Note how centrifugal force has separated beads of tire from the wheel. (arrow). Scott Aviation say, "...all (competitive tires) tested behave in exactly the same manner as the competitive tire pictured."

General 6x2.00 Tail Wheel Tire—on same wheel as above—at same speed. Note complete lack of any distortion. Note how it hugs the wheel perfectly... without any separation. Scott Aviation say, "General's steel wire bead makes it impossible for the tire to be thrown from the wheel."



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